International Review of Public Administration

ISSN: 1229-4659 (Print) 2331-7795 (Online) Journal homepage: http://www.tandfonline.com/loi/rrpa20

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To cite this article: Rosa Minhyo Cho (2014) Examining the relationship between immigrant status and after-school care usage of young children in the US, International Review of Public Administration, 19:4, 329-346, DOI: 10.1080/12294659.2014.966993

To link to this article: http://dx.doi.org/10.1080/12294659.2014.966993

International Review of Public Administration, 2014
Vol. 19, No. 4, 329–346, http://dx.doi.org/10.1080/12294659.2014.966993

Examining the relationship between immigrant status and after-school care usage of young children in the US

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(*Received 11 April 2014; accepted 4 July 2014*)

Using the 2005 National Household Education Survey, this study examines the relationship between parental nativity and the after-school care use patterns of U.S. children. Results indicate that child-care usage patterns vary across households by parental nativity as well as by immigrant generational status. That is, immigrants are less likely to use nonparental care than natives. Among immigrants who use nonparental care, first-generation immigrant children were more likely to be placed in non-relative care or activities, while second-generation immigrant children were more likely to be cared for by relatives. In terms of the time use pattern of youths in such nonparental care settings, second-generation immigrants were less likely to play sports and more likely to watch television or listen to music than natives. Lastly, the study found significant moderation effects of maternal employment status on the association between parental nativity and the type of child care used.

Keywords: parental nativity; after-school child care; immigrant generation

Introduction

In the past several decades, both the number of immigrants in the U.S. and their percentage of the population as a whole have increased rapidly. Such a change is especially pronounced when focusing on the youth population – children with at least one foreign-born parent (hereinafter, children of immigrants) represent a disproportionately high percentage of all children in the U.S. Although immigrants make up only 11% of the total U.S. population, roughly 20% of all school-aged children (ages 6–17) are reported to be children of immigrants, and the percentage is even larger for children below the age of six (Capps, Fix, Ost, Reardon-Anderson, & Passel, 2005). These dramatic demographic shifts in the U.S. pose new challenges to education, social work, and public policy, especially since research has consistently shown immigrant children to be exposed to factors commonly associated with disadvantage (Greenberg, 2013; Hernandez, 2004). Immigrant children have been found to face a variety of circumstances, such as low family income, low parental education, poor access to health care, and language barriers, that place them at risk of developmental delay and poor academic performance in school (Doh, 2012; Hernandez, 2004).

Ensuring the successful development and growth of these immigrant children critically depends upon meeting their academic and social needs. One way of addressing such concern is through after-school program participation. The benefits of after-school

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programs have been widely researched among the academic community (Greenberg, 2013), and such programs have long been recognized by the U.S. federal government as a policy lever to provide additional opportunities for disadvantaged students. In 1994, the U.S. Congress authorized the 21st Century Community Learning Centers (21st Century) program to open up schools so that the community could use them for broader purposes. In 1998, the program was refocused to provide after-school programming services, including academic enrichment and recreational activities, and by 2002 had grown from an appropriation of US $40 million to $1 billion. The level of funding has remained unchanged since (James-Burdumy et al., 2005).

Despite such efforts to increase accessibility to high-quality after-school programs (i.e., center-based care), it remains unclear whether the utilization of such programs differs by parental nativity for school-aged youth, given that most research on child-care selection has focused on children below the age of six. For preschool-aged children, researchers have found consistent evidence that immigrants are more likely than natives to rely on informal care arrangements such as relative care, rather than center-based care such as preschool or prekindergarten (Brandon, 2004). If such patterns persist during school years, this could potentially be a pathway through which children of immigrants are further disadvantaged, since formal child-care centers, usually run by trained individuals, offer a variety of educational and developmental programs (James-Burdumy et al., 2005). The purpose of this study is to examine the effects of child and family characteristics on after-school child-care program participation, with an emphasis on parental nativity. Using a nationally representative sample of American school-aged children, the paper explores the extent to which immigrant status predicts enrollment in certain child-care settings. The results from this study should provide a more complete understanding of the factors that influence immigrants' choice of child care, which can assist policymakers and practitioners to design and implement after-school child-care programs as a potential lever to improve outcomes for these disadvantaged youths.[1]

Factors influencing child-care choice in immigrant families

The current literature regarding after-school child care recognizes that various factors influence child-care decisions within a household. Typically, parents' child-care choices are constrained by time, income, preferences, and family living arrangement. However, when studying the child-care choice patterns of immigrants, additional factors unique to their immigration process (such as language use and immigrant generational status) must be considered.

First, parental time is directly influenced by employment status and work schedule. Not surprisingly, extant research has consistently found unemployed or part-time employed mothers to be less likely to use nonparental care options than full-time employed mothers. From the perspective of time availability, therefore, one should expect immigrants to report lower usage rates of after-school nonparental care compared to their native counterparts, since female immigrants are less likely to participate in the labor market than natives (Van Hook, Brown, & Kwenda, 2004). However, few research studies have examined whether the patterns of placement into certain care settings vary across immigrant and native households, taking maternal employment conditions into consideration. We know from existing research that a mother's decisions to work and to use a certain type of child care are often not independent – mothers who have reliable high-quality child care may be more willing to work (Brandon & Hofferth, 2003).

Yet the processes of such decision-making and the specific factors influencing those decisions have been less studied for the immigrant household. In addition, research has shown that formal, center-based care is frequently used at higher levels when mothers work standard hours, controlling for the employment status and work schedule of fathers (Han, 2004). This is probably related to the fact that center-based care is generally available during standard work hours but less available at nights and weekends. Together, these findings indicate that patterns of child-care utilization may vary substantially among households by maternal employment status and that such discrepancies may be even more exaggerated for immigrant households since they are more likely to work in lower paying jobs that require irregular work schedules (Presser, 2003). Therefore, the *first hypothesis* tested by the theoretical model is that child-care usage patterns will vary across households by parental nativity and such an effect will be moderated by maternal employment status.

Second, a family's income is a crucial family resource that influences the child-care choice process, since most centers or nonrelative-care arrangements require some kind of monetary payment. Prior studies have widely documented the large impact household income has on choice of child care: greater economic disadvantage has been associated with reduced usage of formal child care and increased usage of nonpaid informal care such as relative care (Brandon & Hofferth, 2003); mothers with low family income were found to make trade-offs in the degree of warmth that a caregiver exudes in exchange for an affordable program, whereas mothers with mid-range family income made trade-offs between convenience and other characteristics of care (Rose & Elicker, 2008). Income may not only influence the characteristics of child care but also affect the types of activity children engage in during care. For example, participation in enrichment activities such as organized sports, music and dance lessons, arts, and club activities has been associated with higher child cognitive functioning, but children from low-income families are found less likely to access such programs (Hofferth, Brayfield, Deich, & Holcomb, 1991; National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network, 2004; Pettit, Laird, Bates, & Dodge, 1997; Posner & Vandell, 1999). Therefore, the *second hypothesis* tested by the theoretical model is that children of immigrants will display lower participation in formal care (e.g., center-based care, organized activities), and the types of activity children engage in at care settings will be of lower quality than those of native children.

Third, prior research measures parental preferences by maternal and paternal demographic characteristics such as educational attainment, age, and marital status. Parents' preferences may reflect their beliefs regarding how much supervision school-aged children of given ages need as well as how children should be spending their time in nonparental care arrangements. Maternal education level has been regarded a strong predictor of both the type of nonparental care and the program characteristics: highly educated mothers are more likely to choose center-based care or nonrelative care than parental care only (Brandon & Hofferth, 2003; Fuller, Holloway, & Liang, 1996) and are more likely to prefer a program with an academic-based curriculum (Rose & Elicker, 2008). Research also indicates that younger unmarried mothers are disproportionately more likely to use relative care, thereby compensating for the absence of a spouse, compared to older married mothers (Brandon & Hofferth, 2003). Children's characteristics, such as age, gender, and race, also influence parental preferences for child care. Child's age is a strong predictor of child-care decisions as it is an indicator of maturity and independence (Vandell & Shumow, 1999). Research on the relationship between a child's gender and child care has found that girls are more likely to be

placed with relatives or school-based care than are boys (Brandon & Hofferth, 2003). Parents of different races have been widely documented to display divergent preferences in child care – Hispanics were most likely to use maternal kin, blacks preferred center-based care, and whites relied on their spouses (Fuller et al., 1996; Liang, Fuller, & Singer, 2000; Radey & Brewster, 2007). For school-aged children, Posner and Vandell (1994) found that the rate of participation in after-school programs significantly dropped for whites but increased for blacks during elementary school, which implies that whites fade out of center-based after-school care, whereas blacks tend to increase their reliance on that type of care with age. In the context of immigrant populations, research has established that parental investment in children is strongly influenced by ethnicity, which forms and shapes a person's perception of the importance of quality child care and education (Chiswick & DebBurman, 2006).

The number of children and adults in the household as well as family living arrangements appear to factor into the child-care decision as well. Households with two or more children were found less likely to use nonparental care and to rely substantially less on center-based care compared to households with only one child (Harris, Raley, & Rindfuss, 2002). The presence of other adults in the household was also found to increase the likelihood of school-aged children being cared for by relatives (Casper & Smith, 2004). Research indicates that family living arrangements not only differ between immigrants and natives but also differ within immigrant groups (Clark, Glick, & Bures, 2009). Based on these research findings, the *third hypothesis* tested by the theoretical model is that child-, parental-, and household-level characteristics will be associated with the type of child-care placement.

Lastly, it is important to consider immigrant generational status in examining the child-care choices of immigrant families, since human capital theory predicts assimilation in the host country to be positively related to length of stay (Chiswick & DebBurman, 2006). On the other hand, there is a growing body of literature in the U.S. that finds immigrant generational status to have an inverse relationship with positive developmental outcomes such as academic achievement and health, commonly referred to as the *immigrant paradox* (Suarez-Orozco, Rhodes, & Milburn, 2009). According to these studies, although recent immigrants generally display strong family ties and deep-seated beliefs in the value of education, many face a number of challenges, including high levels of poverty as well as experiences of racism and discrimination, that may thwart their efforts to successfully assimilate into mainstream society. Therefore, the *fourth hypothesis* tested by the theoretical model is that immigrant generational status will be associated with the type of child-care placement, but theory is mixed concerning the direction of its effect.

Method

Data

This study employs public use data from the 2005 National Household Education Survey (NHES) collected by the National Center for Education Statistics. The survey incorporates random-digit-dial telephone surveys of households in the U.S. and was conducted from 3 January through 24 April 2005. One of the three topical surveys collected in the NHES was the After-School Programs and Activities Survey (ASPA-NHES, 2005). The ASPA survey is well suited for the study because it interviewed parents of children in kindergarten through eighth grade and addressed nonparental care arrangement patterns during the after-school hours of elementary and middle school.

A child is considered to be an immigrant if either the child or parent (i.e., mother and/or father) was born in a foreign country or any of the U.S. territories. The study further classifies children by immigrant generational status: first-generation immigrants are children born in a foreign country or any of the U.S. territories; second-generation immigrants are children whose mother and/or father were/was born in a foreign country or any of the U.S. territories; and for third- or subsequent-generation immigrants, both children and parent(s) were born in the U.S. The original sample provides information on 11,684 children between the ages of 3 and 15. Given that the goal of this paper is to examine differences in after-school care arrangements between immigrant and native families, the sample is restricted to children who are not home-schooled, are between the ages of 5 and 10,[2] and for whom it is known whether the mother was born in the U.S. Under these restrictions, the final sample consists of 5712 children: 1466 immigrant children and 4246 native children.

Measures

The models control for a number of independent variables that have been implicated in prior studies to influence parental child-care decisions and to strongly affect immigrant families. This study controls for the following child, mother, father, and family characteristics: child's immigrant status, age, gender, race; mother's age and marital status; mother's and father's educational attainment; maternal/paternal employment status and work schedule; household income; home ownership; number of minors and adults in the household; family structure; urban residency; and region.

The study examines the following three key outcome variables: (1) receipt of any weekly regular nonparental care, (2) type of primary after-school child-care arrangement, and (3) activity child spends the most time doing at the primary nonparental care arrangement. To examine the relationship between the child and family characteristics and the three outcome variables, a series of logistic and multinomial logistic regressions were estimated. Logistic regression was chosen as the estimation model for binary outcome variables because it does not impose the constant marginal effect assumption and provides an odds ratio interpretation (Wooldridge, 2009). In addition, multinomial logistic regression was estimated to model the multiple-choice options of child-care arrangements by estimating the effect of each covariate on the probability of choosing each alternative care option (i.e., relative care, nonrelative care, center-based care, activities) relative to the common benchmark, which in this case is parental care only. The coefficients of the logistic regression models are presented in odds ratios (by exponentiating the logit coefficient, $exp^{\hat{\beta}}$). Given that odds are defined as the ratio of the probability of success and the probability of failure, $p/(1-p)$, an odds ratio greater than 1 would indicate, for example, higher odds of receiving nonparental care, while an odds ratio less than 1 would indicate lower odds of receiving nonparental care.

Results

Descriptive statistics

Tables 1 and 2 present descriptive statistics for both the immigrant and native children samples. Among the 1466 immigrant children, roughly 20% appear to be first-generation immigrants, while 80% are second-generation immigrants. There appears to be little difference between the native and immigrant children in terms of child's

Table 1. Descriptive statistics of immigrant and native children between the ages of five and 10.

				Mean (standard deviation)	
	Definition	**Min**	**Max**	**Native**	**Immigrant**
Child characteristics					
Immigrant generational status					
FFirst-generation immigrant	Child was born in a foreign country or any of the U.S. territories	0	1	–	0.20 (0.40)
Second-generation immigrant	Either parent was born in a foreign country or any of the U.S. territories	0	1	–	0.80 (0.40)
Age	Age of child in years	5	10	7.69 (1.66)	7.61 (1.67)
Female	Sex of child is female	0	1	0.49 (0.50)	0.48 (0.50)
Non-Hispanic white	Child is non-Hispanic white	0	1	0.68 (0.46)	0.19 (0.39)
Non-Hispanic black	Child is non-Hispanic black	0	1	0.14 (0.35)	0.06 (0.25)
Hispanic	Child is Hispanic	0	1	0.11 (0.31)	0.58 (0.49)
Asian/Pacific Islander	Child is Asian or Pacific Islander	0	1	0.004 (0.07)	0.11 (0.31)
Other	Child is other race	0	1	0.06 (0.24)	0.05 (0.22)
Maternal characteristics					
Less than a high school degree	Mother has less than a high school degree	0	1	0.05 (0.22)	0.26 (0.44)
High school graduate	Mother is high school graduate	0	1	0.28 (0.45)	0.26 (0.44)
Vocational degree or some college	Mother has vocational degree or attended some college (no degree)	0	1	0.32 (0.47)	0.21 (0.41)
College graduate	Mother is a college graduate	0	1	0.22 (0.41)	0.17 (0.37)
Graduate or professional school	Mother attended graduate or professional school	0	1	0.13 (0.34)	0.10 (0.30)
Not employed	Mother is not employed/working	0	1	0.30 (0.46)	0.44 (0.50)
Full-time (≥ 35 hours per week)	Mother works full time	0	1	0.46 (0.50)	0.37 (0.48)
Conditional on employment				*0.66*	*0.66*
Part-time (< 35 hours per week)	Mother works part time	0	1	0.24 (0.43)	0.19 (0.39)
Conditional on employment				*0.34*	*0.34*
Regular shift (6 a.m.–6 p.m.)	Mother works regular shift	0	1	0.59 (0.49)	0.45 (0.50)
Conditional on employment				*0.84*	*0.81*
Non-regular shift[a]	Mother works nonregular shift	0	1	11.14 (0.31)	10.57 (0.31)

(*Continued*)

Table 1. (*Continued*).

				Mean (standard deviation)	
	Definition	**Min**	**Max**	**Native**	**Immigrant**
Conditional on employment				*15.94*	*18.97*
Married	Mother is married	0	1	0.72 (0.45)	0.78 (0.41)
Age < 30	Mother is age < 30	0	1	0.17 (0.38)	0.16 (0.37)
30 ≤ age < 35	Mother is 30 ≤ age < 3	0	1	0.21 (0.41)	0.24 (0.42)
35 ≤ age < 40	Mother is 35 ≤ age < 40	0	1	0.27 (0.44)	0.25 (0.43)
40 ≤ age < 45	Mother is 40 ≤ age < 45	0	1	0.22 (0.42)	0.23 (0.42)
Age ≥ 45	Mother is age ≥ 45	0	1	0.13 (0.33)	0.13 (0.33)
Paternal characteristics					
Less than high school degree	Father has less than a high school degree	0	1	0.05 (0.22)	0.24 (0.43)
High school graduate	Father is a high school graduate	0	1	0.31 (0.46)	0.26 (0.44)
Vocational degree or some college	Father has vocational degree or attended some college (no degree)	0	1	0.24 (0.43)	0.18 (0.39)
College graduate	Father is a college graduate	0	1	0.24 (0.43)	0.17 (0.38)
Graduate or professional school	Father attended graduate or professional school	0	1	0.16 (0.36)	0.14 (0.35)
Not employed	Father is not employed/working	0	1	0.06 (0.25)	0.08 (0.27)
Full-time (≥ 35 hours per week)	Father works full time	0	1	0.89 (0.31)	0.88 (0.33)
Conditional on employment				*0.96*	*0.96*
Part-time (< 35 hours per week)	Father works part time	0	1	0.04 (0.20)	0.04 (0.20)
Conditional on employment				*0.04*	*0.05*
Regular shift (6 a.m.–6 p.m.)	Father works regular shift	0	1	0.77 (0.42)	0.75 (0.43)
Conditional on employment				*0.83*	*0.82*
Nonregular shift [a]	Father works nonregular shift	0	1	0.16 (0.37)	0.17 (0.38)
Conditional on employment				*0.17*	*0.19*
Family characteristics					
Inc ≤ 25,000	Income is inc ≤ 25,000	0	1	0.20 (0.40)	0.37 (0.48)
25,000 < inc**ome** ≤ 50,000	Income is 25,000 < inc ≤ 50,000	0	1	0.23 (0.42)	0.24 (0.43)
50,000 < inc**ome** ≤ 75,000	Income is 50,000 < inc ≤ 75,000	0	1	0.23 (0.42)	0.17 (0.37)
75,000 < inc**ome** ≤ 100,000	Income is 75,000 < inc ≤ 100,000	0	1	0.15 (0.35)	0.09 (0.29)
Inc > 100,000	Income is inc > 100,000	0	1	0.19 (0.39)	0.13 (0.34)
Home owner	Family owns the home	0	1	0.75 (0.43)	0.60 (0.49)

(*Continued*)

Table 1. (*Continued*).

				Mean (standard deviation)	
	Definition	**Min**	**Max**	**Native**	**Immigrant**
Two parents & sibling	Lives with two parents and sibling(s)	0	1	0.60 (0.49)	0.69 (0.46)
Two parents & no sibling	Lives with two parents without sibling	0	1	0.13 (0.33)	0.13 (0.34)
Single parent & sibling	Lives with single parent and sibling(s)	0	1	0.15 (0.36)	0.12 (0.32)
Single parent & no sibling	Lives with single parent without sibling	0	1	0.09 (0.28)	0.04 (0.20)
Other	Lives in other type of family structure	0	1	0.04 (0.19)	0.02 (0.15)
Number of minors in household	Number of persons below age 18	1	7	2.17 (0.99)	2.29 (0.98)
Number of adults in household	Number of persons above age 18	1	6	1.96 (0.63)	2.15 (0.72)
Live in urban area	Lives in urban area	0	1	0.81 (0.39)	0.95 (0.22)
Northeast	Lives in Northeast region	0	1	0.18 (0.38)	0.20 (0.40)
South	Lives in Southern region	0	1	0.38 (0.49)	0.31 (0.46)
Midwest	Lives in Midwestern region	0	1	0.24 (0.43)	0.09 (0.29)
West	Lives in Western region	0	1	0.20 (0.40)	0.40 (0.49)
Sample size				4,246	1,466

[a]Non-regular shift includes working from 6 p.m. to 6 a.m., working a variable shift, or working when work is available.

average age and gender, mother's age, father's employment status and work schedule, and the number of minors or adults in the household. However, immigrant children look very different from their native counterparts in terms of some important sociodemographic characteristics that may influence a family's choice of after-school child care. For example, immigrant mothers have much lower educational attainment levels than native mothers and are more likely to be unemployed, to work nonregular hours, and to be married. Immigrant children are also much more likely to live in low-income households. Lastly, the usage and type of regular nonparental after-school care appears to vary by maternal employment status and parental nativity.

Results from regression analyses

Table 3 presents odds ratios of the logistic regression analyses of the likelihood of parents using nonparental care for all sample children and by maternal employment status. Children of immigrants (both first- and second-generation immigrants) are found to have a lower likelihood of being placed in nonparental care during after-school hours than native children, controlling for an extensive list of observed child, parental, and household characteristics. To test if the difference in nonparental care placement is moderated by maternal employment, the same model is run separately for children with employed and unemployed mothers, respectively, in columns 2 and 3. Interestingly, the

Table 2. Descriptive statistics for outcome variables.

	Native			Immigrant		
Receipt of any nonparental care (%)						
	All	*Employed*	*Unemployed*	*All*	*Employed*	*Unemployed*
Yes	70.35	76.70	55.63	55.87	69.52	38.67
N	4246	2966	1280	1466	817	649
Type of primary after-school child care (%)						
	All	*Employed*	*Unemployed*	*All*	*Employed*	*Unemployed*
Parental care only	54.71	45.45	76.06	57.56	41.16	77.76
Relative care	16.17	20.55	6.07	14.43	23.23	3.58
Nonrelative care	6.61	8.44	2.39	5.23	7.95	1.87
Center-based care	19.57	23.11	11.41	19.23	23.74	13.6
Activities	2.94	2.46	4.07	3.55	3.91	3.11
N[b]	4144	2891	1253	1435	792	643
Among children in nonparental care setting, the child spends most of the time doing[c](%)						
Homework/educational		67.45			72.74	
Computers		11.99			10.51	
Arts		27.44			26.93	
Chores		3.30			2.96	
Sports		50.56			41.22	
Indoor play		35.96			28.90	
TV/video games/music		29.68			32.18	
N		1877			609	

[a]The percentage conditional on having some type of nonparental care.
[b]The sample size decreases since children who spent an equal amount of hours in two or more settings (230 children) were dropped from the analysis.
[c]Parents were allowed to pick up to three things their child spends most of their time doing.

results indicate that among children with employed mothers, the effect of parental nativity is not significant, but for children with unemployed mothers, the odds of being placed in regular nonparental care varies significantly by parental nativity. Moreover, the findings indicate that the odds of nonparental care for children with unemployed mothers differ between immigrants by generational status – the odds are only 57% as high for first-generation immigrant children as for native children, whereas the odds for second-generation immigrant children are not different from natives. Such findings may indicate that first-generation immigrants lack familial resources or information networks often critical to obtaining reliable child care, compared to second-generation immigrants or natives.

Next, to further explore differences in the primary type of child care used across households by parental nativity, Table 4 presents the results of the multinomial logistic regressions. In column 1, we find that second-generation immigrant children are more likely to be placed in relative care (as opposed to parental care only), but are also marginally more likely to be placed in activities (as opposed to parental care only) compared to their native counterparts. When the effects of parental nativity were allowed to vary by maternal employment, however, the results indicated that differences in the type of child care are mainly concentrated on children of employed mothers, and that children of unemployed mothers do not display significant differences by parental nativity. For children with employed mothers, the odds of being placed in relative care for second-generation immigrant children increased to 1.53 (from 1.30), and the odds of being placed in nonrelative care and activities

Table 3. Odds ratio of logistic regression examining the receipt of any weekly regular nonparental care.

	(1) All children		(2) Children with employed mothers		(3) Children with unemployed mothers	
First-generation immigrant	0.64	(0.10)***	0.74	(0.16)	0.57	(0.13)**
Second-generation immigrant	0.81	(0.08)**	0.82	(0.10)	0.80	(0.12)
Child's age (years)	1.11	(0.02)***	1.09	(0.03)***	1.15	(0.04)***
Child is female	1.17	(0.07)**	1.24	(0.10)***	1.06	(0.11)
Child is Black	1.04	(0.11)	1.04	(0.14)	1.11	(0.21)
Child is Hispanic	0.99	(0.10)	1.05	(0.14)	0.95	(0.15)
Child is Asian/Pacific Islander	0.71	(0.14)*	0.86	(0.22)	0.55	(0.17)*
Child's race is other	1.05	(0.14)	1.08	(0.19)	1.04	(0.24)
Mother's education						
Less than a high school degree	0.64	(0.08)***	0.64	(0.11)**	0.67	(0.11)**
Vocational degree or some college	1.40	(0.11)***	1.32	(0.14)***	1.58	(0.22)***
College graduate	1.99	(0.21)***	1.87	(0.25)***	2.23	(0.40)***
Graduate or professional school	2.05	(0.28)***	1.88	(0.31)***	3.05	(0.78)***
Mother is unemployed	0.40	(0.05)***	–	–	–	–
Mother works part time	0.56	(0.05)***	0.59	(0.05)***	–	–
Mother works a regular shift	1.29	(0.13)**	1.31	(0.14)***	–	–
Mother is married	0.70	(0.08)***	0.58	(0.10)***	0.91	(0.17)
Mother's age < 30	1.25	(0.17)*	1.61	(0.29)***	0.89	(0.19)
Mother's 30 ≤ age < 35	0.92	(0.11)	1.03	(0.15)	0.77	(0.15)
Mother's 35 ≤ age < 40	0.93	(0.10)	1.10	(0.15)	0.68	(0.13)**
Mother's 40 ≤ age < 45	1.05	(0.12)	1.14	(0.16)	0.87	(0.17)
Father's education						
Less than a high school degree	1.12	(0.15)	1.58	(0.31)**	0.82	(0.17)
Vocational degree or some college	0.98	(0.10)	0.92	(0.11)	1.06	(0.18)
College graduate	1.23	(0.14)*	1.14	(0.17)	1.34	(0.26)
Graduate or professional school	1.49	(0.21)***	1.34	(0.24)	1.63	(0.37)**
Father is unemployed	0.59	(0.09)***	0.46	(0.09)***	0.81	(0.21)
Father works part time	0.72	(0.13)*	0.69	(0.14)*	0.76	(0.25)
Father works a regular shift	1.04	(0.10)	1.08	(0.13)	0.93	(0.15)
25k < income ≤ 50k	1.01	(0.10)	0.94	(0.12)	1.12	(0.17)
50k < income ≤ 75k	1.47	(0.17)***	1.51	(0.22)***	1.46	(0.27)**
50k < income ≤ 100k	1.86	(0.25)***	2.12	(0.37)***	1.44	(0.32)
Income > 100k	2.47	(0.34)***	2.33	(0.43)***	2.71	(0.60)***
Own home	1.01	(0.08)	0.98	(0.11)	1.06	(0.14)
Family structure						
Two parents & no sibling	1.13	(0.13)	1.12	(0.16)	1.06	(0.21)
Single parent & sibling	0.80	(0.28)	0.69	(0.34)	0.86	(0.43)
Single parent & no sibling	1.00	(0.37)	0.81	(0.42)	1.14	(0.61)
Other	0.73	(0.21)	0.50	(0.20)*	1.08	(0.45)
# of minors in household	0.95	(0.04)	0.93	(0.05)	0.95	(0.06)
# of adults in household	0.99	(0.06)	0.96	(0.07)	1.06	(0.09)
Live in urban area	1.25	(0.11)**	1.13	(0.12)	1.52	(0.23)***
Northeast	1.29	(0.13)**	1.30	(0.17)**	1.21	(0.21)
South	1.16	(0.10)*	1.30	(0.14)**	0.91	(0.14)
West	1.38	(0.14)***	1.34	(0.17)**	1.32	(0.22)*
N	5579		3683		1896	

Note. Odds ratios are exponentiated logistic regression coefficients, e^{β}. Numbers in parentheses are standard errors. Omitted categories are native children, child is male, non-Hispanic white, mother is high school graduate, mother is full-time employed (for employed mother analysis), mother works nonregular shift (for employed mother analysis), mother is not married, mother is 45 years old or older, father is high school graduate, father is full-time employed, father works nonregular shift, household income is $25,000 or less, family does not own home, two parents with sibling family structure, lives in nonurban (rural) area, and Midwest.
*= significant at 10%; **= significant at 5%; ***= significant at 1%.

Table 4. Relative risk ratio of multinomial logistic regression examining the type of after-school child care arrangement.

	(1) All children		(2) Children with employed mothers		(3) Children with unemployed mothers	
Relative care (vs. parental care only)						
First-generation immigrant	**0.68**	**(0.17)**	**0.81**	**(0.24)**	**0.51**	**(0.26)**
Second-generation immigrant	**1.30**	**(0.17)****	**1.53**	**(0.22)*****	**0.58**	**(0.21)**
Mother is unemployed	0.10	(0.02)***	–	–	–	–
Mother works part time	0.33	(0.04)***	0.32	(0.04)***	–	–
Mother works regular shift	1.21	(0.15)	1.21	(0.15)	–	–
Mother is married	0.70	(0.11)**	0.66	(0.13)**	0.74	(0.26)
Mother's age < 30	2.62	(0.49)***	2.90	(0.61)***	4.54	(2.95)**
Mother's 30 ≤ age < 35	1.80	(0.31)***	1.68	(0.31)***	4.64	(2.99)**
Mother's 35 ≤ age < 40	1.55	(0.26)***	1.47	(0.26)**	5.11	(3.29)**
Mother's 40 ≤ age < 45	1.37	(0.23)*	1.34	(0.24)	2.75	(1.91)
Father is unemployed	0.63	(0.15)*	0.53	(0.15)**	0.94	(0.52)
Father works part time	0.63	(0.17)*	0.58	(0.16)*	0.83	(0.65)
Father works regular shift	1.29	(0.18)*	1.40	(0.22)**	0.76	(0.28)
Family structure						
Two parents & no sibling	1.29	(0.20)	1.24	(0.21)	1.51	(0.69)
Single parent & sibling	1.43	(0.64)	0.96	(0.55)	2.25	(1.61)
Single parent & no sibling	1.87	(0.88)	1.08	(0.65)	6.44	(4.96)**
Other	1.51	(0.58)	0.66	(0.33)	6.07	(3.73)***
# of minors in household	0.98	(0.05)	0.97	(0.06)	0.97	(0.12)
# of adults in household	1.48	(0.10)***	1.39	(0.11)***	1.60	(0.23)***
Nonrelative care (vs. parental care only)						
First-generation immigrant	**1.25**	**(0.39)**	**1.83**	**(0.65)***	**0.56**	**(0.47)**
Second-generation immigrant	**0.95**	**(0.18)**	**1.03**	**(0.21)**	**0.98**	**(0.47)**
Child's age (years)	0.90	(0.03)***	0.87	(0.04)***	1.05	(0.11)
Mother's education						
Less than a high school degree	0.61	(0.18)*	0.66	(0.23)	0.57	(0.35)
Vocational degree or some college	1.18	(0.20)	1.23	(0.23)	0.75	(0.37)
College graduate	1.57	(0.31)**	1.58	(0.34)**	1.69	(0.94)
Graduate or professional school	1.54	(0.35)*	1.58	(0.40)*	2.23	(1.47)
Mother is unemployed	0.17	(0.04)***	–	–	–	–
Mother works part time	0.31	(0.05)***	0.29	(0.05)***	–	–
Mother works a regular shift	1.86	(0.38)***	1.88	(0.39)***	–	–
Mother is married	0.48	(0.11)***	0.48	(0.13)***	0.28	(0.15)**
Father is unemployed	0.39	(0.18)**	0.29	(0.15)**	1.45	(1.86)
Father works part time	0.96	(0.32)	0.66	(0.25)	6.03	(4.18)***
Father works a regular shift	1.61	(0.35)**	1.63	(0.37)**	2.04	(1.60)
# of minors in household	0.99	(0.08)	1.03	(0.09)	0.62	(0.17)*
# of adults in household	0.74	(0.10)**	0.65	(0.10)***	0.87	(0.25)
Center-based care/after-school program (vs. parental care only)						
First-generation immigrant	**0.86**	**(0.17)**	**1.03**	**(0.28)**	**0.87**	**(0.27)**
Second-generation immigrant	**0.98**	**(0.11)**	**1.04**	**(0.15)**	**1.00**	**(0.22)**
Child's age (years)	1.00	(0.02)	0.95	(0.03)*	1.11	(0.05)**
Child is female	0.90	(0.07)	0.91	(0.08)	0.84	(0.12)
Child is Black	1.91	(0.24)***	1.92	(0.29)***	1.91	(0.49)**
Child is Hispanic	1.51	(0.18)***	1.47	(0.21)***	1.60	(0.38)**
Child is Asian/Pacific Islander	1.22	(0.29)	1.52	(0.43)	0.43	(0.28)
Child is other	1.21	(0.21)	1.14	(0.24)	1.37	(0.45)

(*Continued*)

Table 4. (*Continued*).

	(1) All children		(2) Children with employed mothers		(3) Children with unemployed mothers	
Mother's education						
Less than a high school degree	0.80	(0.13)	0.78	(0.18)	0.79	(0.18)
Vocational degree or some college	1.14	(0.12)	1.11	(0.14)	1.41	(0.30)
College graduate	1.13	(0.15)	1.04	(0.16)	1.64	(0.45)*
Graduate or professional school	1.75	(0.26)***	1.76	(0.30)***	1.42	(0.52)
Mother is unemployed	0.45	(0.07)***	–	–	–	–
Mother works part time	0.34	(0.04)***	0.34	(0.04)***	–	–
Mother works a regular shift	2.51	(0.36)***	2.49	(0.37)***	–	–
Mother is married	0.76	(0.11)*	0.62	(0.12)**	1.07	(0.26)
Father is unemployed	0.45	(0.10)***	0.27	(0.08)***	1.06	(0.39)
Father works part time	0.65	(0.15)*	0.59	(0.16)*	0.77	(0.39)
25k < income ≤ 50k	0.85	(0.11)	1.01	(0.16)	0.69	(0.16)
50k < income ≤ 75k	0.96	(0.14)	1.16	(0.21)	0.77	(0.21)
50k < income ≤ 100k	1.24	(0.20)	1.74	(0.35)***	0.50	(0.18)*
Income > 100k	1.27	(0.21)	1.79	(0.37)***	0.60	(0.20)
Family structure						
Two parents & no sibling	1.57	(0.21)***	1.39	(0.22)**	1.62	(0.44)*
Single parent & sibling	1.38	(0.68)	0.97	(0.65)	1.87	(1.34)
Single parent & no sibling	1.59	(0.81)	1.13	(0.77)	1.10	(0.87)
Other	1.24	(0.52)	0.62	(0.35)	1.97	(1.21)
# of minors in household	0.89	(0.05)**	0.82	(0.06)***	0.99	(0.09)
# of adults in household	0.90	(0.07)	0.80	(0.07)**	1.10	(0.13)
Live in urban area	1.71	(0.22)***	1.80	(0.26)***	1.46	(0.38)
Activity (vs. parental care only)						
First-generation immigrant	**1.24**	**(0.48)**	**2.52**	**(1.19)***	**0.41**	**(0.32)**
Second-generation immigrant	**1.47**	**(0.34)***	**1.56**	**(0.48)**	**1.26**	**(0.46)**
Child's age (years)	1.16	(0.06)***	1.21	(0.09)***	1.10	(0.09)
Child is female	1.41	(0.23)**	1.52	(0.32)**	1.34	(0.34)
Child is Black	1.78	(0.48)**	2.67	(0.88)***	0.97	(0.48)
Child is Hispanic	0.90	(0.25)	1.12	(0.41)	0.78	(0.33)
Child is Asian/Pacific Islander	1.81	(0.69)	1.87	(0.93)	1.73	(1.12)
Child is other	1.29	(0.42)	1.31	(0.57)	1.22	(0.62)
Mother's education						
Less than a high school degree	0.29	(0.13)***	0.32	(0.22)*	0.31	(0.18)**
Vocational degree or some college	0.83	(0.18)	0.97	(0.30)	0.72	(0.23)
College graduate	0.95	(0.24)	1.68	(0.58)	0.40	(0.17)**
Graduate or professional school	1.18	(0.36)	2.13	(0.82)**	0.37	(0.22)*
25k < income ≤ 50k	0.84	(0.23)	0.45	(0.19)*	1.47	(0.57)
50k < income ≤ 75k	1.08	(0.32)	0.95	(0.39)	1.09	(0.51)
50k < income ≤ 100k	1.07	(0.37)	1.14	(0.52)	0.72	(0.42)
Income > 100k	1.16	(0.39)	1.28	(0.59)	0.80	(0.43)
N	5579		3683		1896	

Note. Relative risk ratios are exponentiated multinomial logistic regression coefficients, e^{β}. Numbers in parentheses are standard errors. The model controls for all variables included in Table 3, but all results are not reported. Omitted categories are native children, child is male, non-Hispanic white, mother is high school graduate, mother is full-time employed (for employed mother analysis), mother works nonregular shift (for employed mother analysis), mother is not married, mother is 45 years old or older, father is high school graduate, father is full-time employed, father works nonregular shift, household income is $25,000 or less, family does not own home, two parents with sibling family structure, lives in nonurban (rural) area, and Midwest.
*significant at 10%; **significant at 5%; ***significant at 1%.

Table 5. Odds ratio of logistic regression examining the time use patterns of children during primary nonparental care.

	Homework/ educational	Computer	Arts	Chores/ work	Sports/outdoor play	Indoor play	TV/video/listen to music
First-generation immigrant	1.66*	0.75	0.80	1.40	0.71	0.78	1.23
	(p = .06)	(p = .46)	(p = .42)	(p = .62)	(p = .16)	(p = .36)	(p = .43)
Second-generation immigrant	1.15	0.85	0.93	1.34	0.68***	0.82	1.36**
	(p = .32)	(p = .45)	(p = .63)	(p = .45)	(p = .005)	(p = .17)	(p = .03)
***N* = 2619**							

Note. Odds ratios are exponentiated logistic regression coefficients, e^{β}. Numbers in parentheses are p-values. The above regression controls for the same set of covariates as in Tables 3 and 4.
*significant at 10%; **significant at 5%; ***significant at 1%.

for first-generation immigrant children became marginally significant and increased to 1.83 (from 1.25) and 2.52 (from 1.24), respectively. Lastly, the results indicated no difference in the odds of being placed in after-school programs (i.e., center-based care) by parental nativity, and the effects did not change when children were examined separately by maternal employment status.

Table 4 also reveals some interesting patterns of how child, parental, and household characteristics affect child-care selection. First, it seems that being an unmarried mother increases the likelihood of using relative, nonrelative, and after-school programs rather than parental care only. Second, having more adults in the household seems to increase the odds of being placed in relative care while decreasing the odds of nonrelative care and center-based care. And lastly, as previous studies on child care have indicated, factors such as having a highly educated mother who works regular hours (between 6 a.m. and 6 p.m.), living in a high-income household, and having fewer minor siblings appear to play an important role in determining placement into center-based care and/or after-school programs.

Table 5 presents findings from seven separate logistic regressions among children placed in some type of nonparental care arrangement. Results indicate that first-generation immigrants are placed in nonparental care settings that are no worse (or even better) than the placements of natives in terms of time-use patterns promoting child development. Specifically, the odds of reporting that the child spends most of his or her time doing homework and engaging in educational activities is about 1.66 times higher for first-generation immigrants than for natives, and the difference is marginally significant. However, second-generation immigrant children do not appear to be as fortunate. Results show that the odds of spending time playing sports was only about 68% as high for second-generation immigrants as for natives, whereas the odds of watching television/video or listening to music was about 136% as high for second-generation immigrants as for natives.

In sum, the findings of this study confirm our initial review of the literature in several ways. The results reveal that child-care usage patterns do indeed vary across households by parental nativity and that such patterns vary among immigrants by their generational status. Specifically, immigrants are generally less likely to use nonparental care than natives, and among those who do, the analyses show that they are more likely to rely on informal child-care options such as relative care or nonrelative care. Findings indicate that although first-generation immigrant children are placed in nonrelative care or activities, second-generation immigrant children are more likely to be cared for by relatives, and the ways in which they spend their time in such placements seem to further disadvantage them. We also found significant moderation effects of maternal employment status; most of the differences between immigrants and natives in the type of child care selected were concentrated on children of employed mothers. On the other hand, this study was not able to confirm the theoretical prediction that immigrant children would be disadvantaged in terms of accessing formal center-based care/after-school programs compared to natives, given that it found no difference in the likelihood of participation between the two groups. The next section provides a detailed discussion on the findings as they relate to the research hypotheses presented in the outset of this paper. Implications and suggestions for public policy as well as concluding remarks are also presented.

Discussion and conclusion

The purpose of this study was to examine the unique influence of parental nativity status on after-school child-care arrangement and children's time use patterns during nonparental care. The empirical models provided evidence in support of the first research hypothesis, which assumed child-care usage would vary across households by parental nativity, and be moderated by maternal employment status. Specifically, data analyses revealed that immigrants are much less likely to place their school-aged children in regular nonparental care (as opposed to parental care only) compared to natives, and that differences in type of nonparental care by parental nativity are only present for children with employed mothers.

Next, analyses of the types of after-school child-care arrangement partially supported the second hypothesis, given immigrant children's higher odds of being placed in informal child care such as relative care or nonrelative care. However, it is only partially supported, since immigrant children do not display differences in the odds of relying on formal after-school programs/center-based care compared to natives, and they had slightly higher odds of being placed in organized activities. This study's finding of immigrants' proclivity for informal care such as relative care is consistent with findings from prior research (Brandon, 2004). There may be several reasons for this trend. For example, immigrants may view the use of relatives for child care as a more favorable and appropriate option than do natives; the economic needs of the relatives who provide care may be greater for immigrants than natives; the relatives of immigrants may lack formal labor market opportunities available to natives (Uttal, 1999). To further explore whether economic reasons such as need or opportunity in the formal labor market could be related to the study's finding, a chi-square test between immigrant generational status and a variable asking parents *whether they pay a fee for relative care* was conducted. The test revealed that second-generation immigrants (23.3%) were indeed statistically significantly more likely than first-generation immigrants (13.6%) or natives (13.5%) to pay a fee for relative care, implying that economic need may be an important factor behind this trend, but further examination of this topic is necessary. The second hypothesis also predicted that immigrant children would engage in lower quality activities at nonparental care settings compared to native children. Again, this hypothesis is supported by the empirical findings, and the quality of activities seemed also to vary by immigrant generational status. Specifically, only second-generation immigrant children were much less likely to engage in sports or outdoor play and more likely to spend most of their time watching television/video or listening to music compared to native youths.

The findings confirmed the third hypothesis: child characteristics such as age and race, parental characteristics such as maternal marital status, education level, age, and work schedule, and household characteristics such as family structure, income, and the number of adults and children were all found to be significantly associated with the type of child-care placement. Lastly, this study found ample evidence supporting the fourth hypothesis, which predicted immigrant generational status would be an important factor in determining the type of child-care placement. Specifically, the results indicated that, conditional on maternal employment, first-generation immigrant children are more likely to be placed in nonrelative care, while second-generation immigrant children are more likely to be placed in relative care. Although prior studies on child care of Latinos or immigrants have widely noted their preference to rely

on relative care (Fuller et al., 1996; Liang et al., 2000; Radey & Brewster, 2007), few have documented a reliance on nonrelative care. In addition, results from the time-use patterns of children placed in nonparental care revealed evidence in support of the immigrant paradox theory. That is, greater assimilation to the U.S. was found to raise the odds of immigrant children being placed in lower quality nonparental care, which in turn may lead to poorer developmental outcomes. To further explore whether such divergence in child-care usage patterns is related to preference rather than to unequal access to high-quality care options, a chi-square test between immigrant generation status and a variable asking parents *how much difficulty they had in finding the type of after-school care they wanted for their child* was conducted. The test revealed that the response varied significantly from what would be expected by chance ($\chi^2 = 18.40$, $df = 2$, $p = 0.000$),[3] and that natives (87.6%) and first-generation immigrants (86.8%) were much more likely to report 'little or no difficulty' than second-generation immigrants (81.3%). Again, this strengthens our conclusion that higher immigrant generational status exerts a negative influence on the quality of after-school child-care placement and that this negative association is related to poorer access to preferred care.

This study presents several important implications for child-care policy as well as for after-school education policy targeting immigrants. As discussed in the beginning of this paper, child care for elementary-school-aged children has been viewed as a potential policy lever that can improve the educational trajectories of immigrant youth by reducing early differences in achievement and thereby reducing educational gaps later in life. Although the study found no difference in the rate of enrollment in formal after-school programs/center-based care between immigrant and native children, it did find that the types of activity immigrants engage in during nonparental care are of poorer quality for second-generation immigrant children. From a policy standpoint, this implies that resources to improve after-school programs would be better targeted to specifically address disparities in the types of activity provided across facilities, and service provision to immigrant children should be sensitive to their generational status. The notions that longer residency in the U.S. does not necessarily lead to positive assimilation, and that successful integration into mainstream society depends on the *context of reception* (Portes & Rumbaut, 2006), suggest that education and child-care policies should focus on creating a favorable context of reception for immigrant children. Specifically, integration into mainstream society may be best encouraged when emotional help as well as tangible support resources are provided (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Therefore, tailoring after-school care services to include high-quality enrichment activities such as tutoring and organized sports as well as mentorship programs and concern from adults outside of the family could potentially counter the negative effects of feeling undervalued in the larger society.

Another important implication from this study is that immigrants' high reliance on informal care (such as relative care) is concentrated on second-generation immigrant children, and that part of the reason for such high reliance may be related to economic need. This indicates that in order to truly address the gap in the quality of after-school care services received by immigrants versus natives, the economic needs of both the child's family and relatives must be considered. A recent evaluation of a U.S. governmental child-care subsidy for preschool-aged children showed that families using subsidies chose higher quality care than comparable families who did not use subsidies, and that this effect was largely due to their increased use of

formal child-care arrangements such as center-based care over informal care such as relative care (Ryan, Johnson, Rigby, & Brooks-Gunn, 2011). If one applies such logic to the context of immigrants and school-aged children, provision of after-school child-care subsidies may work in a similar manner by reducing immigrants' high reliance on informal care and gradually moving them towards higher quality programs.

Lastly, an important limitation of this study is that information on ethnicity as well as country of origin was unavailable in the data. Therefore, the role of home country culture on maternal employment, as well as child-care decisions among immigrant households, was not considered. Future research should further examine the influence of culture on immigrant child-care usage patterns, controlling for both economic and demographic factors.

Acknowledgements

This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government [NFR-2013S1A3A2055042].

Notes

1. After-school programs are commonly referred as 'center-based care' in surveys collecting information on child care for school-aged children.
2. The study focuses on children between 5 and 10 years old since the vast majority of children enrolled in after-school programs were reported to be in the third grade or younger (Hofferth et al., 1991).
3. Such a relationship between immigrant generational status and access was not found for children of unemployed mothers ($\chi^2 = 1.43$, $df = 2$, $p = 0.49$).

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